Solving Enterprise Access to Disparate LRS/GIS Data

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Introduction

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Objectives

- Define important terms
- Identify the problem
- Identify the challenges
- Describe the solution
- Show the solution
- Conclusion

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Definitions

Transportation Enterprise – **The holistic collection of stakeholders, data and procedures pertinent to accessing and creating decision support information**

Enterprise Database – **A unified database for all spatial and fiscal data that support application development**

Enterprise Stakeholders

Maintenance

Finance

IT

GIS

Engineering

Planning

The Problem

Disparate data across the enterprise

- Each department has their own data
- Everyone wants access to each other's data
- Need to make informed decisions
- Need to view and analyze all data together
- No one wants to give up ownership of their data
- Need integration of data across the enterprise
- But how?

Integration Challenges

Organizational Structure

- Who owns the LRS?
- Who owns the GIS?
- Who owns the Transportation Events?
  - Accidents, Pavement, ADT, Construction, Bridges, etc.
- What level of cooperation is there among the disparate groups in the organization?

Integration Challenges

Operational Constraints

- Are there plans for a single enterprise database?
- If so, what's the time-line?
- Across the enterprise how many referencing methods are used?
- Are proprietary technologies being used?

Enterprise

Maintenance

Finance

IT

GIS

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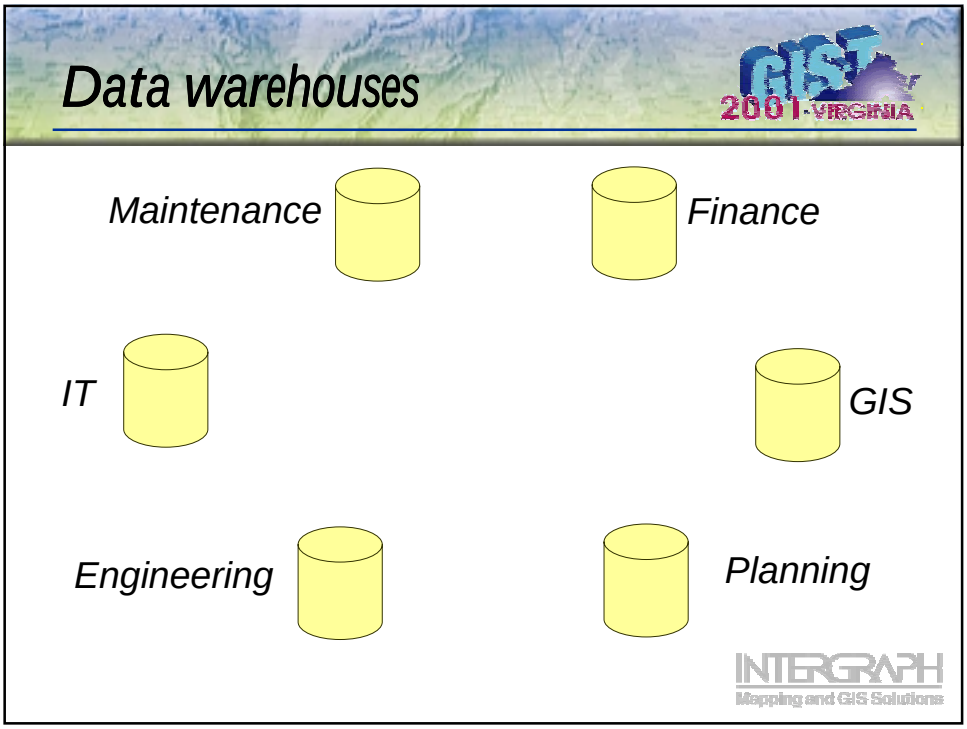
Planning


Data warehouses
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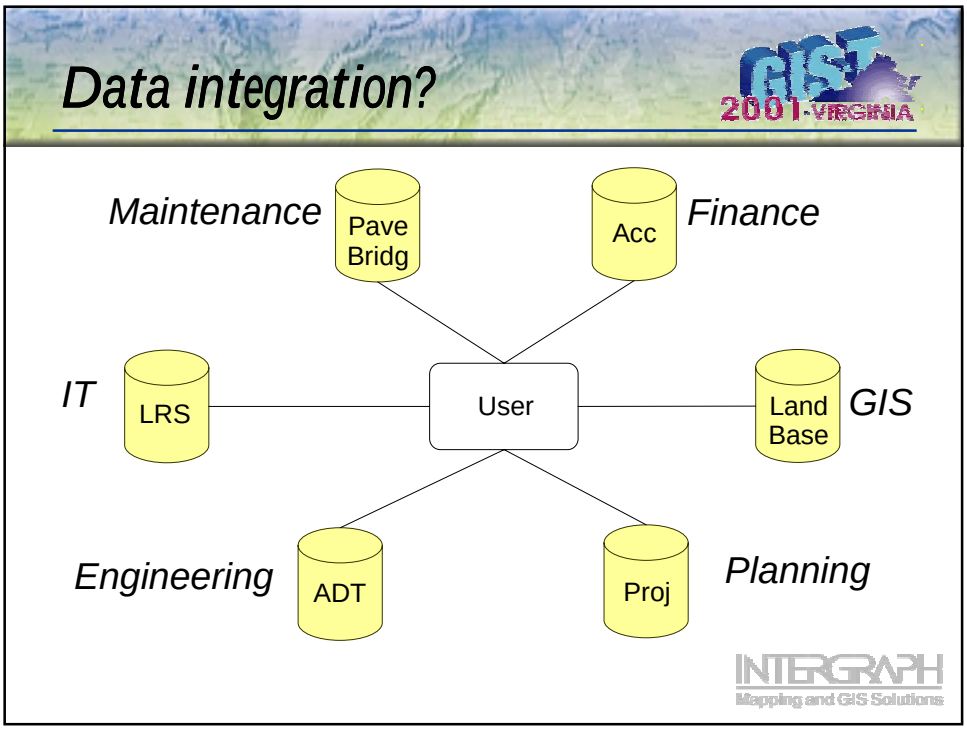
Data integration?
GIST 2001 VIRGINIA
Maintenance
Pave
Bridg
Acc
Finance
IT
LRS
User
Land
Base
GIS
Engineering
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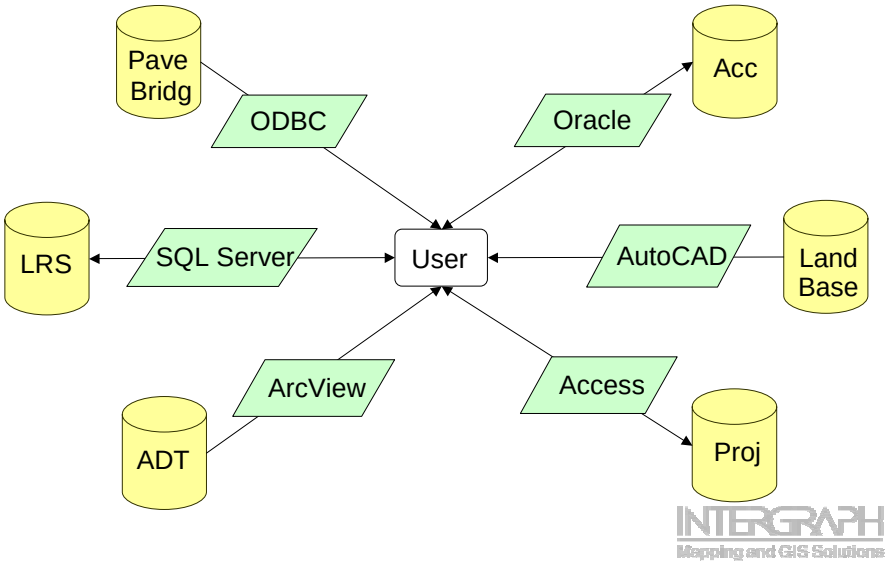
Data servers



Data servers

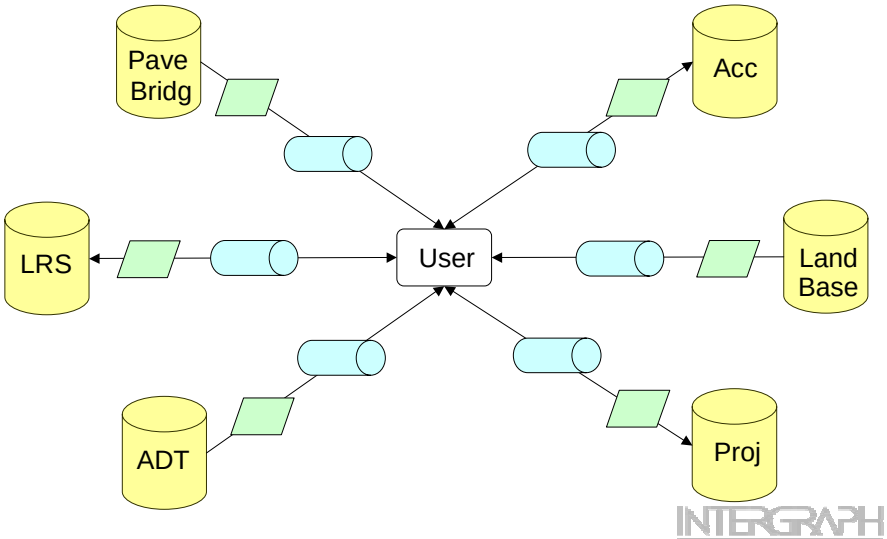
- **Understand native data format**
- **Read-only or read-write**
- **Transform native data to a common format**
- **Serve up data to variety of applications**
- **Applications only need to understand the common format**
- **Used by desktop or web applications**

Common data format

Recordsets

- Consist of records and fields
- Can be thought of as database tables in memory
- Can contain attribute data: character, integer, float, date, blob, etc.
- Can contain geometry: points, lines, areas, etc.

Pipes

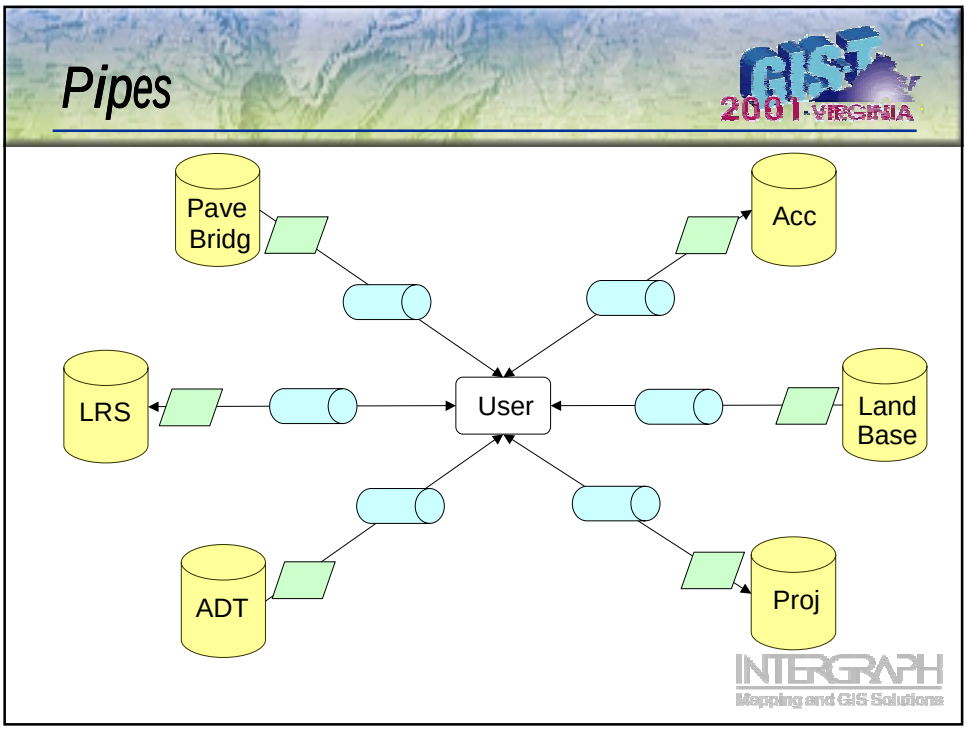


Pipes

- Software components
- Understand the common format
- Perform some specialized function on data
- Produce data in the common format
- Can be used in any application that understands the common format

Examples of Pipes

- Coordinate system transformations
- Filter records by attribute values
- Spatial intersection of two recordsets
- Dynamic Segmentation
- Event Overlay
- Event Conversion


Pipes
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Pave Bridg
Acc
LRS
User
Land Base
ADT
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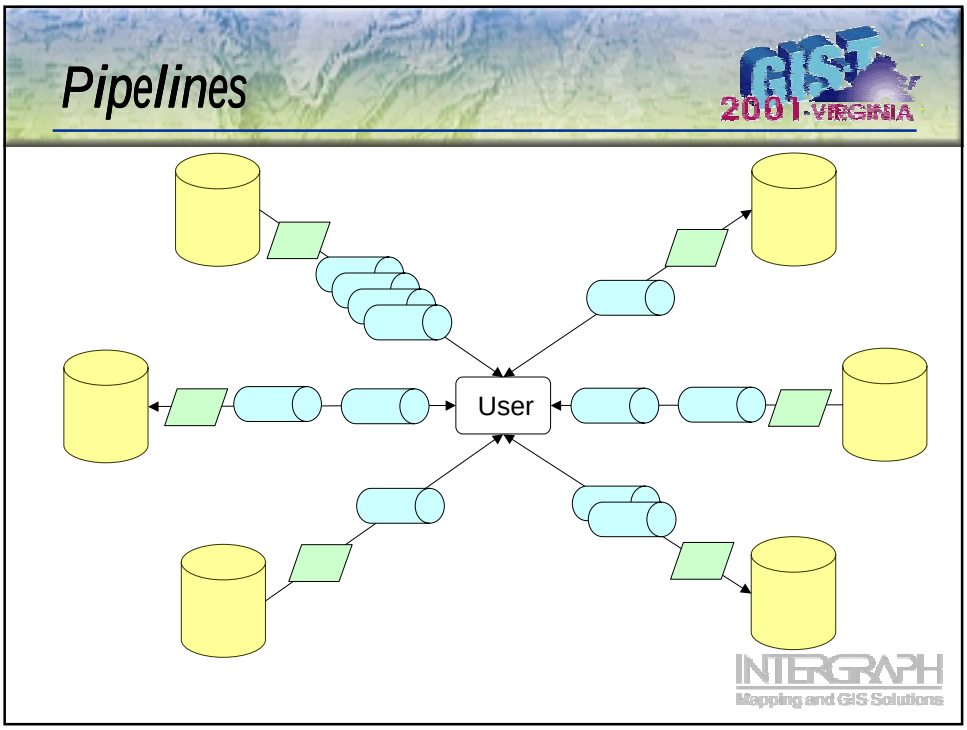
Pipelines
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User
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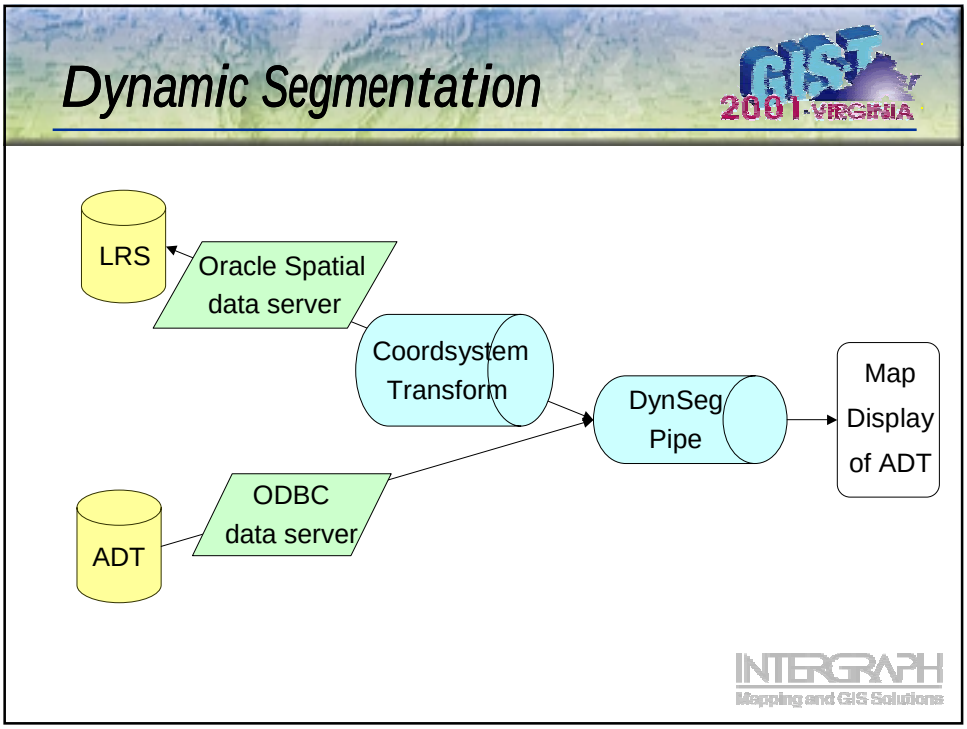
Dynamic Segmentation
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LRS
Oracle Spatial data server
Coordsystem Transform
DynSeg Pipe
Map Display of ADT
ADT
ODBC data server
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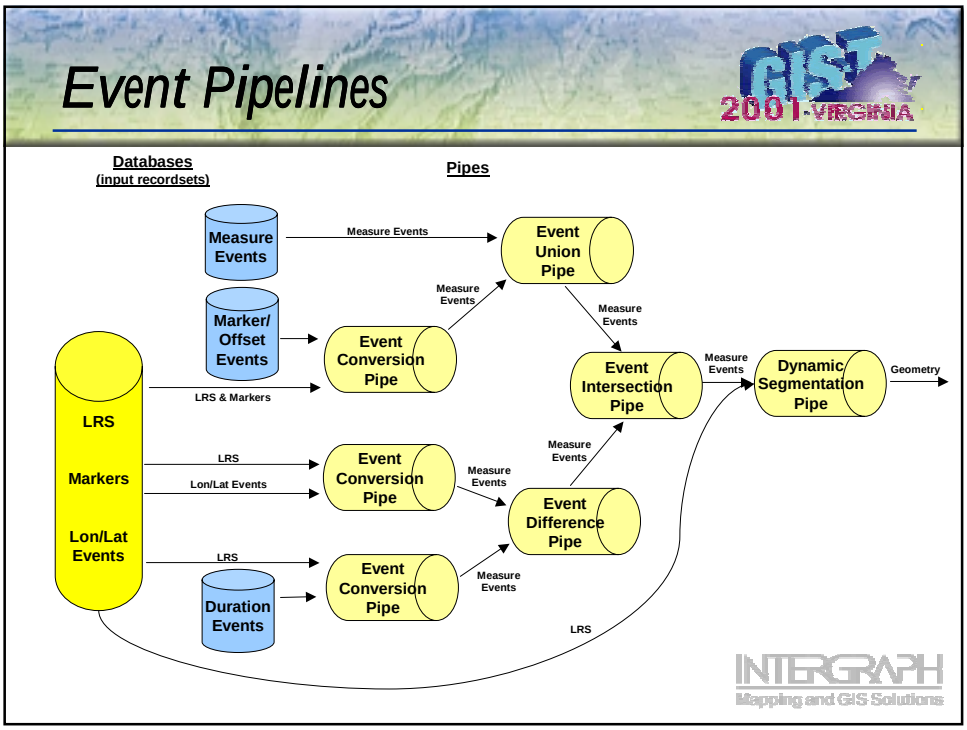
Event Pipelines
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Databases (input recordsets)
Pipes
Measure Events
Marker/ Offset Events
LRS
Markers
Lon/Lat Events
Duration Events
Event Union Pipe
Event Conversion Pipe
Event Intersection Pipe
Event Difference Pipe
Dynamic Segmentation Pipe
Geometry
LRS & Markers
Lon/Lat Events
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Actions and Solutions

Enterprise Database can:

- **Unify application development efforts**
- **Centralize data**
- **Provide an impetus to implement an enterprise-wide LRM if desired**
- **Standardize training across the enterprise**

Technology that:

- **Accesses disparate data formats (i.e. ODBC connectivity)**
- **Exploits different referencing methods**
- **Allows "Business as Usual" during migration**

Conclusion

Enterprise database or not, technology can help solve the problems of

- **Disparate data storage**
- **Disparate data formats**
- **Disparate referencing methods**

when analyzing business data.

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